

AMENDMENTS TO THE CLAIMS

The following claim set replaces all prior versions, and listings, of claims in the application:

1-13. (canceled)

14-27. (canceled)

28. (currently amended) A non-woven mat produced ~~according to the method of claim 14~~ by a method which comprises:

- (a) forming a slurry of fibers in a liquid or foam wherein at least 20% of the fibers in the slurry are in fiber bundles in which the fibers are held in the bundles by a substantially non-water soluble sizing;
- (b) forming a non-woven web from the slurry on a foraminous element;
and
- (c) withdrawing at least one of liquid and foam from the slurry on the foraminous element so as to form a non-woven mat.

29. (currently amended) A non-woven mat produced ~~according to the method of claim 26 and having~~ by a method which comprises:

- (a) forming a slurry of fibers in a liquid or foam wherein at least 20% of the fibers in the slurry are in fiber bundles in which the fibers are held in the bundles by a substantially non-water soluble sizing;
- (b) forming a non-woven web from the slurry on a foraminous element at a speed of at least 60 m/mi; and
- (c) withdrawing at least one of liquid and foam from the slurry on the foraminous element so as to form a non-woven mat; and wherein steps (a)-(c) are practiced using liquid as the slurring fluid.

30. (currently amended) A non-woven mat produced according to the method of ~~claim 18~~ by a method which comprises:

- (a) forming a slurry of fibers in a liquid or foam wherein at least 20% of the fibers in the slurry are in fiber bundles in which the fibers are held in the bundles by a substantially non-water soluble sizing;
- (b) forming a non-woven web from the slurry on a foraminous element;
and
- (c) withdrawing at least one of liquid and foam from the slurry on the foraminous element so as to form a non-woven mat; wherein
step (a) is practiced to produce a slurry wherein at least 50% of the fibers are in fiber bundles of between 5-450 fibers with the length of the bundles substantially the same as the length of the fibers making up the bundles, and at least 85% of the fibers in the bundles have a diameter of between about 7-500 microns; and wherein
(a)-(c) are practiced so as to produce a mat having a substantially uniform density of between about 50-150 gm/m²; and wherein
the mat has a substantially uniform density of about 75 gm/m² or less.

31-33. (canceled)

34-36. (canceled)

37-40. (canceled)

41. (previously presented) A composite product comprising an inner layer and outer layers, said outer layers being made from cured non-woven mats of chopped strands comprising:

a plurality of fibers disposed in a non-woven configuration to define a mat;

at least 20% of said fibers in fiber bundles having between 5 - 450 fibers per bundle and the length of said bundles being substantially the same as the lengths of the fibers forming said bundles;
at least 85% of said fibers of said fiber bundles have a diameter of between about 7 - 35 microns;
at least 85% of said fibers in said bundles have a length of between 5 - 100 mm; wherein
said fibers in said fiber bundles are held together with a substantially water insoluble sizing; and wherein
said inner layer is formed of at least one of inexpensive fibers, scrap fibers, and material of significantly lower density than said outer layers.

42. (previously presented) A composite product as recited in claim 41, wherein at least 10% of the fibers in said fiber bundles comprise reinforcement fibers selected from the group consisting essentially of glass, aramid, carbon, polypropylene, acrylic, and PET fibers, and combinations thereof.

43. (previously presented) A composite product as recited in claim 41, wherein at least 50% of the fibers in said fiber bundles comprise glass fibers.

44. (previously presented) A composite product as recited in claim 42, wherein at least 85% of said fibers in said fiber bundles are selected from said group.

45. (previously presented) A composite product as recited in claim 41, wherein at least 85% of said fibers in said fiber bundles have a length of between about 7 - 50 mm.

46. (previously presented) A composite product as recited in claim 41, wherein said mat has a density of between about 50-900 g/m².

47. (previously presented) A composite product as recited in claim 41, wherein at least 85% of said fibers in said fiber bundles have between 10 - 450 fibers per bundle and a length substantially the same as the length of said fiber bundle, and wherein the sizing is epoxy resin or PVOH.

48. (previously presented) A composite product as in claim 41, wherein said mats have a substantially uniform density of less than 75 g/m².

49. (previously presented) A composite product as in claim 41, wherein said mats have a substantially uniform density of between about 50-150 g/m².

50. (previously presented) A composite product as in claim 49, wherein at least 60% of said fiber bundles have between 10-200 fibers per bundle, and wherein substantially all the fibers in the bundles are substantially straight.

51. (previously presented) A non-woven mat of chopped strands, comprising:
a plurality of fibers disposed in a non-woven configuration to define a mat;
at least 20% of said fibers in fiber bundles having between 5-450 fibers
per bundle and the length of said bundles being substantially the
same as the lengths of the fibers forming said bundles;
at least 85% of said fibers of said fiber bundles have a diameter of
between about 7-500 microns;
said fibers in said fiber bundles being held together with a substantially
water insoluble sizing; wherein
said mat is manufactured by a foam process; and wherein
the mat has at least two layers, which exhibit different physical or chemical
properties.

52. (previously presented) A non-woven mat as recited in claim 51 wherein said mat is manufactured by using a foam process with a headbox to form at least two layers

of said mat having substantially different properties which include at least one of different density, different material, different reinforcement threads, or different reinforcement webs.

53. (previously presented) A non-woven mat as recited in claim 51 wherein, in at least one layer, at least 85% of said fibers in said bundles have a length of between 5-100 mm.

54. (previously presented) A non-woven mat as recited in claim 51 wherein, in at least one layer, at least 85% of said fibers in said bundles have a diameter of between 7-35 microns.

55. (previously presented) A non-woven mat as recited in claim 51 wherein, in at least one layer, at least 10% of the fibers in said fiber bundles comprise reinforcement fibers selected from the group consisting essentially of glass, aramid, carbon, polypropylene, acrylic, and PET fibers, and combinations thereof.

56. (previously presented) A non-woven mat as recited in claim 51 wherein, in at least one layer, at least 50% of the fibers in said fiber bundles comprise glass fibers.

57. (previously presented) A non-woven mat as recited in claim 51 wherein, in at least one layer, at least 85% of said fibers in said bundles have a length of between 5 - 100 mm, and wherein at least 85% of said fibers in said bundles have a diameter of between 7 - 35 microns.

58. (previously presented) A non-woven mat as recited in claim 55 wherein, in at least one layer, at least 85% of said fibers in said fiber bundles are selected from said group.

59. (previously presented) A non-woven mat as recited in claim 51 wherein, in at least one layer, at least 85% of said fibers in said fiber bundles have a length of between about 7 - 50 mm.

60. (previously presented) A non-woven mat as recited in claim 51 wherein, in at least one layer, said mat has a density of between about 50 - 900 g/m².

61. (previously presented) A non-woven mat as recited in claim 51 wherein, in at least one layer, at least 85% of said fibers in said fiber bundles have between 10 - 450 fibers/bundle and a length substantially the same as the length of said fiber bundle, and a diameter between about 7 - 35 microns; and wherein the sizing is epoxy resin or PVOH.

62. (previously presented) A non-woven mat as recited in claim 51 wherein substantially all the fibers in the bundles are substantially straight.